

AMENDMENTS

In the Claims

The following is a marked-up version of the claims with the language that is underlined (“___”) being added and the language that contains strikethrough (“—”) being deleted:

1. (Currently Amended) An atomizer system comprising:

a melt material to be atomized;

a containment portion for securing the melt material;

a unit which accelerates the melt material such that the melt material experiences an acceleration force higher than Earth's standard gravitational force; and

atomizing fluid that flows across an exposed surface of the melt material, the exposed surface of the melt material being located within the containment portion;

wherein the containment portion and the unit which accelerates the melt material are operative to prevent the melt material from being ejected from the containment portion due to the acceleration force; and

wherein, while the melt material is experiencing the acceleration force, liquid droplets of the melt material become entrained in the atomizing fluid flowing across the exposed surface of the material such that at least some of the liquid droplets aerosolize and are ejected from the containment portion.
2. (Currently Amended) The atomizer system of claim 1 further comprising means for introducing relative motion between the containment portion and the melt material.

3. (Previously Amended) The atomizer system of claim 1 wherein the melt material is rotated about more than one axis.
4. (Previously Amended) The atomizer system of claim 1 wherein the melt material is introduced into the containment portion as a liquid as the containment portion is being moved by the unit which accelerates the melt material.
5. (Canceled)
6. (Previously Amended) The atomizer system of claim 1 wherein the unit accelerating the melt material is a centrifuge.
7. (Original) The atomizer system of claim 1 further comprising a source of vibration to introduce disturbances within the melt material.
8. (Previously Amended) The atomizer system of claim 1 wherein the flow of atomization fluid is continuous.
9. (Original) The atomizer system of claim 1 wherein the containment portion is made of a solid form of the melt material itself.
10. (Canceled)
11. (Original) The atomizer system of claim 1 wherein the atomizing fluid is a gas.

12. (Original) The atomizer system of claim 11 wherein the gas that is the atomizing fluid is inert.
13. (Original) The atomizer system of claim 11 wherein the gas that is the atomizing fluid is oxidizing.
14. (Original) The atomizer system of claim 11 wherein the gas that is the atomizing fluid is reducing.
15. (Original) The atomizer system of claim 1 wherein the atomizing fluid is a liquid.
16. (Original) The atomizer system of claim 15 wherein the liquid that is the atomizing fluid is inert.
17. (Original) The atomizer system of claim 15 wherein the liquid that is the atomizing fluid is oxidizing.
18. (Original) The atomizer system of claim 15 wherein the liquid that is the atomizing fluid is reducing.
19. (Original) The atomizer system of claim 1 wherein the atomizing fluid contains particulates therein.

20. (Original) The atomizer system of claim 1 wherein the thermodynamic conditions, i.e. temperature, pressure, and density, as well as velocity (axial and angular) of the atomizing fluid are user selectable.
21. (Original) The atomizer system of claim 1 further comprising a cooling system.
22. (Previously Amended) The atomizer system of claim 1 further comprising a liquefying system that liquefies the melt material prior to introducing the melt material to the containment portion.
23. (Canceled)
24. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies radiant heating to the melt material to be atomized.
25. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies induction heating to the melt material to be atomized.
26. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies electric arc heating to the melt material to be atomized.
27. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies lasers to the melt material to be atomized.

28. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies hot atomizing fluid heating to the melt material to be atomized.

29. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies chemical reaction heating to the melt material to be atomized.

30. (Withdrawn) The atomizer system of claim 22 wherein the liquefying system applies refractory containment heating to the melt material to be atomized.

31. (Original) The atomizer system of claim 22 wherein the liquefying system applies plasma arc heating to the melt material to be atomized.

32. (Currently Amended) A method of atomizing a melt material comprising the steps of:
accelerating the melt material to be atomized;
flowing an atomizing fluid across an exposed surface of the material while the exposed surface of the material is experiencing an acceleration force higher than Earth's standard gravitational force; and
while the exposed surface of the material is experiencing the acceleration force, entraining liquid droplets of the material in the atomizing fluid flowing across the exposed surface of the material such that the liquid droplets aerosolize and create fine particulates.

33. (Currently Amended) The atomizer method of claim 32 further ~~comprises~~ comprising the step of introducing relative motion between the containment portion and the material.

34. (Previously Amended) The atomizer method of claim 32 wherein accelerating the material to be atomized comprises the step of rotating the material about more than one axis of rotation.
35. (Previously Amended) The atomizer method of claim 32 further comprising introducing the material to be atomized in liquid form into the containment portion while the acceleration forces are acting upon the containment portion.
36. (Canceled)
37. (Canceled)
38. (Previously Amended) The atomizer method of claim 32 further comprising the step of vibrating the material while the material is experiencing the acceleration forces to facilitate disturbances within the material.
39. (Previously Amended) The atomizer method of claim 32 wherein flowing comprises continuous flowing of the atomizing fluid.
40. (Currently Amended) The atomizer method of claim 33 wherein the containment portion is made of a solid form of the material to be atomized.
41. (Canceled)
42. (Original) The atomizer method of claim 32 wherein the atomizing fluid is a gas.

43. (Original) The atomizer method of claim 42 wherein the gas that is the atomizing fluid is inert.

44. (Original) The atomizer method of claim 42 wherein the gas that is the atomizing fluid is oxidizing.

45. (Original) The atomizer method of claim 42 wherein the gas that is the atomizing fluid is reducing.

46. (Original) The atomizer method of claim 32 wherein the atomizing fluid is a liquid.

47. (Original) The atomizer method of claim 46 wherein the liquid that is the atomizing fluid is inert.

48. (Original) The atomizer method of claim 46 wherein the liquid that is the atomizing fluid is oxidizing.

49. (Original) The atomizer method of claim 46 wherein the liquid that is the atomizing fluid is reducing.

50. (Original) The atomizer method of claim 32 wherein the atomizing fluid contains particulates therein.

51. (Previously Amended) The atomizer method of claim 32 further comprising the step of selecting the thermodynamic conditions, i.e. temperature, pressure, and density, as well as velocity (axial and angular) of the atomizing fluid.

52. (Canceled)

53. (Previously Amended) The atomizing method of claim 32 further comprising the step of liquefying the material prior to accelerating the material.

54. (Previously Amended) The atomizing method of claim 53 wherein liquefying the material is continuous.

55. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying radiant heating to the material to be atomized.

56. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying induction heating to the material to be atomized.

57. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying electric arc heating to the material to be atomized.

58. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying lasers to the material to be atomized.

59. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying hot atomizing fluid heating to the material to be atomized.

60. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying chemical reaction heating to the material to be atomized.

61. (Withdrawn and Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying refractory containment heating to the material to be atomized.

62. (Previously Amended) The atomizing method of claim 32 further comprising liquefying the material by applying plasma arc heating to the material to be atomized.

63. (Previously Presented) The atomizing system of claim 1 wherein, while the melt material is experiencing the acceleration forces, portions of the atomizing fluid become entrapped within the melt material such that the portions of the atomizing fluid within the melt material buoyantly travel to the exposed surface of the melt material and form at least some of the liquid droplets of the melt material.

64. (Previously Presented) The atomizing system of claim 1 wherein the atomizing fluid that entrains the liquid droplets of the melt material flows in a direction substantially parallel to an axis of rotation of the containment portion.

65. (Previously Presented) The atomizing system of claim 64 wherein the containment portion is a cylinder.

66. (Previously Presented) The atomizing method of claim 32 further comprising entrapping portions of the atomizing fluid within the material such that, while the material is experiencing the acceleration forces, the portions of the atomizing fluid within the material buoyantly travel to the exposed surface of the material and form at least some of the liquid droplets.